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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,993	08/04/2003	Jaroslav Hyncek	TI-36483	5016
23494	7590	09/20/2005	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			MONDT, JOHANNES P	
			ART UNIT	PAPER NUMBER
			2826	

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/633,993	Applicant(s) HYNECEK, JAROSLAV	
	Examiner Johannes P. Mondt	Art Unit 2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 5/11/05.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Amendment filed 5/11/05 form the basis for this office action. In said Amendment Applicant substantially amended all outstanding elected claims 11-17 through substantial amendment of independent claim 11. Claims 1-10 and 18-20 have previously been withdrawn from consideration. Comments on Remarks in said Amendment are included below under "Response to Arguments".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Hynecek (5,502,318). Hynecek teaches a charge coupled device comprising: a first clocked gate 24/28 coupled to a first clocking signal ϕ_1 (Figure 1 and col. 2, l. 43-55 and col. 3, l. 1-17); a field plate 40/42/44/46 adjacent to and surrounding the first clocked gate (col. 2, l. 56-67 and col. 3, l. 1-17), and coupled to a DC bias source V_{bias} (col. 3, l. 1-17); and a second clocked gate 26 adjacent to an surrounded by the field plate and coupled to a second clocking signal f_2 (col. 2, l. 43-55 and col. 3, l. 1-17), the field plate separates the first clocked gate from the second clocked gate (Figure 1), and the first clocking signal is clocked out of phase with the second clocking signal (col. 3, l. 8-10). In conclusion, claim 11 is anticipated by Hynecek.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bosiers et al (5,388,137) in view of Kato (5,760,430) (previously made of record).

Bosiers et al teach (title, abstract, cols. 4-8 and Figure 4) a charge coupled device comprising:

a first clocked gate 39 (col. 6, l. 11) coupled to a first clocking signal ϕ_2 (col. 6, l. 50-56):

a field plate 38 (col. 6, l. 11) adjacent to and surrounding the first clocked gate (Figure 4); and

a second clocked gate 41 (col. 6, l. 11) adjacent to and surrounded by the field plate (Figure 4) and coupled to a second clocking signal ϕ_4 (col. 6, l. 50-55), the field plate is between the first clocked gate 39 and the second clocked gate 41 (Figure 4), and the first clocking signal is clocked out of phase with the second clocking signal (Figure 5).

Bosiers et al do not necessarily teach the limitation that said field plate to be coupled to a DC bias source.

However, it would have been obvious to include said limitation in view of Kato, who teach the possibility to reduce the number of required clocks (cf. abstract) by coupling the equivalent 14 of field plate 38 to a DC signal source 18 (see Figure 1 and col. 6, l. 7-24). *Motivation* to include the teaching by Kato in the invention by Bosiers et al derives from the resulting decrease in complexity of the clock system through reduction of the number of clocks required.

Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bosiers et al and Kato as applied to claim 11 and further in view of McNutt (4,857,979) (previously made of record). As detailed above, claim 11 is unpatentable over Bosiers et al in view of Kato. Bosiers et al also teach a well region 33 (cf. col. 6, l. 4), but *do not necessarily* teach well regions under clocked gates, nor a clocked barrier. *However, it would have been obvious* to include said clocked barrier and clocked well in view of McNutt, who, in a patent on an infrared CCD imaging device (title, abstract, col. 1, col. 2, l. 1- col. 2, l. 27 and col. 2, l. 53 – col. 4, l. 50), hence closely related to the invention by Bosiers et al, teaches the inclusion of a clocked well 58 (cf. col. 4, l. 21) and barrier gate 52 (cf. col. 4, l. 22) to a clocked gate so as to prevent back-flow of charge carriers (cf. col. 4, l. 21-28). *Motivation* to include the teaching by McNutt into the invention by Bosiers et al derives from the enhanced control on the motion of collected charges. The teaching can be combined readily by adding the barrier gate and doping the substrate to each clocked gate.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bosiers et al and Kato as applied to claim 11, and further in view of Hynecek (5,430,481) (IDS

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item AC). As detailed above, claim 11 is unpatentable over Bosiers et al in view of Kato. Bosiers et al nor Kato necessarily teach the further limitation as defined by claim 14, although Bosiers et al do disclose a solid-state imaging apparatus using their CCD device (cf. col. 4, l. 6-12). *However, it would have been obvious to include* said further limitation in view of *Hynecek*, who, in a patent on a CCD image sensor, - hence analogous art, teaches the incorporation of a charge transfer device into a solid-state imaging apparatus of the frame transfer type (cf. abstract). In particular, Hynecek teaches the incorporation of the CCD device in an imager including a frame transfer image array defined by reference to this patent in Applicant's specification and as depicted in Figure 1 and described in col. 2, l. 25-48), with the following attributes: two phase imaging area 22, single phase frame memory area 24, dual serial registers 26 and 28, charge detection amplifiers 30 and 32, bottom clearing drain 34, and external connections 12. *Motivation* for inclusion of the teaching by Hynecek in the invention by Bosiers et al and Kato is the obviously advantageous application of the CCD device component to an imager compatible with both the NTSC standard and requirements for still photography (col. 1, l. 15-35). *Combination* of the teaching in this regard by Hynecek in the invention by Bosiers et al is easily accomplished by replacement of the component for moving the charges.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hynecek (5,502,318) in view of Hynecek (6,278,142 B1), henceforth called "Hynecek_2", previously made of record. As detailed above, Hynecek (5,502,318) anticipates claim 11. Hynecek does not necessarily teach a full frame device, but does

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indicate a full frame device can be built using the CCD device taught by Hynecek (col. 6, l. 24-49). It would have been obvious to follow through on this suggestion by Hynecek in view of Hynecek_2, teaching inter alia an IMPACTRON cell (Figures 5-6), which is the defining portion of a Full Frame device (col. 7, l. 56-64 in Hynecek_2). *Motivation* derives from the obviousness to apply the invention to an area of application already indicated by the inventor.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hynecek (5,502,318) in view of Farnow (4,173,064). As detailed above, Hynecek anticipates claim 11. Hynecek does not necessarily teach an anti-blooming drain. However, it would have been obvious to include an anti-blooming drain in view of Farnow, who teaches an anti-blooming drain for the removal of excess signal charge generated in response to optical overload of a CCD sensing region (abstract and col. 4, l. 19-44). Motivation to include the teaching by Farnow in the device by Hynecek derives from the removal of "blooming", i.e., the spreading of charge from a light sensing element illuminated much more brightly than adjacent light sensing elements to said adjacent light sensing elements, causing a blur in the image (col. 1, l. 37-56 in Farnow).

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bosiers et al and Kato as applied to claim 11 above, and further in view of Hynecek (5,337,340) (IDS item AB). As detailed above, claim 11 is unpatentable over Bosiers et al in view of Kato. Neither Bosiers et al nor Kato necessarily teach the further limitation that the device is a charge-multiplying device. However, it would have been obvious to include said further limitation in view of Hynecek (5,337,340) (IDS item AB), who teaches a

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CCD device that is a charge multiplying device through appropriate selection of the voltage difference between subsequent clocked gates (ϕ_3 and ϕ_4), causing charge multiplication through impact ionization (cols. 1-3 and cols. 4-5, in particular col. 5, lines 30-49). *Motivation* to include the teaching by Hynecek in the device by Bosiers et al derives from the teaching by Hynecek of increased sensitivity through charge-multiplication (col. 1, l. 25-col. 2, l. 41).

Response to Arguments

Arguments in Remarks, which would have been persuasive when used to support a traverse of rejections of the prior art cited before if based on the original claim language, are found non-persuasive in light of the available prior art used in the rejections given above.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Johannes P. Mondt whose telephone number is 571-272-1919. The examiner can normally be reached on 8:00 - 18:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J. Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

~~NATHAN J. FLYNN~~
~~SUPERVISORY PATENT EXAMINER~~
~~TECHNOLOGY CENTER 2800~~

JPM
September 10, 2005